



QSimBench: An Execution-Level Benchmark Suite for Quantum Software Engineering

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QSIMBENCH

QSimBench is an open benchmark suite designed for reproducible, execution-level experimentation in Quantum Software Engineering. *QSimBench* provides **precomputed measurement outcomes** across diverse algorithms, input sizes, and noisy backends, enabling **fast, efficient** and **lightweight** quantum experiments.

14 quantum algorithms from *MQT Bench*, spanning:

- Quantum gates (GHZ, W, QFT)
- Hybrid/variational (VQE, QAOA, QNN)
- Randomized ansätze

Circuit sizes: 4 to 15 qubits

6 Backends:

- 1 Ideal
- 5 Noisy

Execution data:

- **20,000 shots** per (algorithm, size, backend)
- *OpenQASM circuit* definition
- *Backend noise model and configuration*

qsimbench 0.1.1

`pip install qsimbench`

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